

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Peter K. LAW

Appln. No.: Unassigned

Group Art Unit: Unassigned

Filed: November 8, 2001

Examiner: Unassigned

Title: MYOBLAST TRANSFER THERAPY FOR RELIEVING PAIN AND FOR
TREATING BEHAVIORAL AND PERCEPTIVE ABNORMALITIES

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please enter the following amendments.

IN THE SPECIFICATION

Page 1, following the title, please insert the following:

--This application is a continuation of Application No. 09/132,321 filed August 11, 1998, which is based on Provisional Application No. 60/055,199 filed August 11, 1997.--

IN THE CLAIMS:

Please cancel all pending claims without prejudice or disclaimer and add the following claims:

34. A method of supplying to the central nervous system of a patient a peptide that binds an opioid receptor or that interferes with binding of substance P to its receptor, comprising:

(a) obtaining allogenic muscle cells from the patient and preparing an in vitro culture;

(b) transducing the culture of (a) with DNA encoding the peptide, such that the myogenic cells express the peptide, then

(c) introducing the transduced myogenic cells as a suspension to a muscle from the patient, the muscle selected from the group consisting of a paraspinal muscle, levator scapulae muscle, muscles between laminae IV and V of the spinal cord and neck muscle, so that the peptide is produced in proximity to the spinal cord of the patient.

35. The method of claim 34, wherein step (a) comprises the mechanical stimulation of the patient's skeletal muscle tissue to produce a reservoir of satellite myoblast cells prior to removal of the satellite myoblast cells for in vitro culture.

36. The method of claim 35, wherein the mechanical stimulation is carried out by numerous needle probings or by sonication.

37. The method of claim 35, wherein the satellite cells are allowed to develop for about 3 days after mechanical stimulation and before their harvest.

38. The method of claim 34, wherein more than 1 billion cells are cultured for administration into the patient.

39. The method of claim 34, wherein step (c) comprises injecting the transduced myogenic cells diagonally through muscle fibers.

40. The method of claim 34, wherein large chondroitin-6-sulfate proteoglycan is added to the suspension of cells prior to administering the cells to the patient.

41. The method of claim 40, wherein large chondroitin-6-sulfate proteoglycan is added to a final concentration of between about 5 micromolar to about 5 millimolar.

42. The method of claim 40, wherein insulin is added to the suspension of cells prior to administering the cells to the patient.

43. A method of supplying to the central nervous system of a patient a peptide that binds an opioid receptor or that interferes with binding of substance P to its receptor, comprising:

(a) obtaining allogenic muscle cells from the patient and preparing an in vitro culture;

(b) transducing the culture of (a) with DNA encoding the peptide, such that the myogenic cells express the peptide, then

(c) introducing at least 1 billion cells from (b) as a suspension into a patient muscle or into a region that contains fat cells.

44. The method of claim 43, wherein step (a) comprises the mechanical stimulation of the patient's skeletal muscle tissue to produce a reservoir of satellite myoblast cells prior to removal of the satellite myoblast cells for in vitro culture.

45. The method of claim 44, wherein the mechanical stimulation is carried out by numerous needle probings or by sonication.

46. The method of claim 44, wherein the satellite cells are allowed to develop for about 3 days after mechanical stimulation and before their harvest.

47. The method of claim 43, wherein about 10 billion progeny myoblast cells are cultured for administration into the patient.

48. The method of claim 43, wherein step (c) comprises injecting the transduced myogenic cells diagonally through muscle fibers.

49. The method of claim 43, wherein large chondroitin-6-sulfate proteoglycan is added to the suspension of cells prior to administering the cells to the patient.

50. The method of claim 49, wherein large chondroitin-6-sulfate proteoglycan is added to a final concentration of between about 5 micromolar to about 5 millimolar.

51. The method of claim 49, wherein insulin is added to the suspension of cells prior to administering the cells to the patient.

52. The method of claim 43, wherein the cells are introduced into a region that contains fat cells.

REMARKS

This application is a continuation application filed under 37 C.F.R. § 1.53(b). Claims 34-52 remain pending after amendment of the claims in this response.

The added claim terms come from the original specification as filed. The following terms can be found in the specification throughout, for example on the page and line numbers cited:

"reservoir of satellite cells"	p. 9 line 27-28
"needle probings, or by sonication"	p. 9 lines 30-31,

	p. 16 line 32
more than "1 billion"	p. 12 line 12
"injecting" the administered cells "diagonally through muscle fibers"	
	p. 12 lines 31-32
location "between laminae IV and V of the spinal cord"	p. 12 lines 37-38
"large chondroitin-6-sulfate"	p. 13 line 29, page 14 lines 1-3; lines 17-18
"insulin"	p. 13 line 21
"1 to 10 billion progeny myoblast"	p. 17 line 26

Applicant is a pioneer in the field of cell therapy using myoblasts. Applicant has discovered several methodological features that, to a layman may seem uninteresting or even trivial, such as using a large minimum number of cells to obtain success, use of allogenic cells (from the same patient), mechanical probing of the cells before sampling, and transverse injection into a recipient muscle. However, to a skilled artisan these factors are not obvious, yet one or more of them are absolutely crucial to success of the claimed method and cannot be dismissed. Applicant discovered the need for a minimum number of cells due to scavenging actions of the body, and this concept applies equally well to the claimed methods. Applicant has generated data that shows the extreme effect of mechanical probing, which most workers overlook. Likewise, applicant obtained data that shows the advantageous effect of transverse (compared with other types of) injection of cells into recipient muscle tissue. Yet another discovery that potentiates the claimed

method is the use of large chondroitin sulfate and also insulin. These features, alone, and especially in various combinations were not appreciated by artisans.

The invention is not a new peptide or protein but rather new methods for bringing together genes and expressing them within cells that can be placed where needed. New claims now are presented that recite the important methodological features of this method invention.

Reconsideration and allowance are requested.

The Commissioner is hereby authorized to charge for any excess claim fee, excess independent claims fee and surcharge for late filing to the undersigned's Deposit Account No. 08-1641. In the event any variance exists between the amount authorized and the Patent Office fees, please charge or credit any difference to the undersigned's Deposit Account No. 08-1641.

Respectfully submitted,

Date November 8, 2001

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